Staffing of Secondary Schools in Scotland

Memorandum by
Scottish Education Department

EDINBURGH
HER MAJESTY'S STATIONERY OFFICE
1969

SBN 11 490255 0

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Introduction

This Memorandum describes two studies of secondary school staffing which have been carried out by the Scottish Eduction Department. The first, described in Part I, is a comparative analysis of pupil/teacher ratios in all secondary schools, and the second, described in Part II, is a more detailed analysis of staffing and organisation in 47 secondary schools of various types.

The main purpose of the studies was to throw light on the disparities which were known to exist in pupil/teacher ratios between different secondary schools, and on the factors affecting pupil/teacher ratios.

There are several reasons why these studies are of importance. In the first place, by isolating and comparing the effects of the various factors which appear to have a bearing on pupil/teacher ratios—geographical factors, the size, type and denomination of the school, the internal organisation of the school, and so on—the studies provide a better factual basis on which action might be taken to remedy deficiencies and bring about a more equitable distribution of the teaching force.

In the second place, the studies have helped to show which factors appear to make for relatively economical or uneconomical staffing arrangements and to indicate ways in which education authorities and headteachers might be able to deploy the teaching staff within the schools more effectively.

Thirdly, the studies should help towards the establishment of criteria for more accurate estimates of national and local teacher requirements. Any rational attempt to match teacher supply with needs postulates that needs can be accurately and objectively assessed. In the secondary school sector this is exceptionally difficult as schools which are superficially similar may vary significantly in a variety of circumstances such as the composition of the pupil population, the courses and subjects studied, the accommodation available and the particular qualifications and interests of the teaching staff. Until now, staffing requirements in secondary schools in Scotland have been measured by simply adding to the number of certificated teachers under 70 in post, the number of teachers estimated by education authorities and other school managers as required to fill vacancies, replace uncertificated teachers and re-employed retired teachers over 70, and eliminate over-sized classes. The aggregate of these separate estimates was taken to represent the national need. This method is open to the objection that it is heavily dependent on education authorities' assessments of their requirements, which, in the absence of other than very general guidance by the Department as to standards, have tended to vary markedly. The studies described in this Memorandum provide a basis for a possible new approach to the determination of objective standards for estimating national and local requirements.

It is not claimed that the studies by themselves provide the answers to staffing problems. As factual studies they did not assume any value judgments as to what constitutes good staffing practice or reasonable staffing standards, and no such judgments are made in this Memorandum. Moreover, the studies have in several important aspects shown the need for much more research. In doing so, and in contributing a factual basis for further investigation and discussion, it is felt that they will have served a useful purpose.

The information used in the studies was obtained, in the case of Part I, from the annual returns from schools of numbers of pupils and teachers, and in the case of Part II from the headteachers of the selected schools. The Department are particularly grateful to the headteachers who took part in the latter study and provided much helpful comment as well as detailed information. The interpretation of the information collected is, of course, that of the Department.

Throughout the Memorandum the terms "certificated" and "uncertificated" have been used to denote qualified and unqualified teachers respectively since, in the period to which the studies relate, certification by the Secretary of State was the mark of recognition of the qualified teacher. Since 1st, April, 1968, however, certification has been replaced by registration with the General Teaching Council.

Part I: Comparative Analysis of Pupil/Teacher Ratios

Ratios as general measure of comparison

1.1 From the annual return of numbers of pupils and teachers in individual secondary schools (form E2) at January 1968, an analysis was made of pupil/teacher ratios, with the object of ascertaining the extent to which differences exist in staffing ratios between individual schools, and the factors which may be associated with these differences. It is not claimed that the pupil/teacher ratio tells the whole story about the adequacy or otherwise of the staffing of a school—the quality of the teaching staff, the rate of staff turnover, and the ability of the school to offer instruction in an adequate range of subjects are obviously important, for example. The pupil/teacher ratio is, however, a useful general measure from which valid comparisons and conclusions can be drawn.

Scope of the analysis and definition of terms

1.2 It is essential at the outset to be clear about the scope of the analysis and the meaning of the terms used in this Part of the Memorandum.

1.3 Included in the analysis are all secondary schools and departments* under the management of education authorities, with the exception of special schools and farm schools. Excluded also are grant-aided schools.

1.4 The *pupil* component of the pupil/teacher ratio is the number of pupils on the register of the school at January 1968, adjusted to correct any distortion caused by the fact that in some areas the pupil population of secondary schools in January is significantly different from the average for the session as a whole.

1.5 The *teacher* component of the pupil/teacher ratio presents some difficulties as, depending on the purpose in mind, it may or may not be pertinent to include part-time teachers, uncertificated teachers and visiting teachers. Throughout the Memorandum, two ratios will commonly be used: (a) the "certificated full-time equivalent" (CFTE) ratio, in which the teacher component is the number of certificated teachers, including the full-time equivalent of part-time teachers, actually on the staff of the school at January (i.e. uncertificated teachers and visiting, supply, and relief teachers are excluded), and (b) the "all teacher full-time equivalent" (all FTE) ratio, in which the teacher component includes uncertificated teachers in addition to those included under (a). Normally the context will make it clear which ratio is meant, but where necessary the abbreviations "CFTE" and "all FTE" will be used to distinguish them.

1.6 It is important to distinguish between overall pupil/teacher ratios† resulting from the aggregation of individual schools and those relating to the secondary sector as a whole; the latter must take account of teachers not attached to individual schools (visiting, supply and relief teachers, organisers, advisers, etc.) and also, depending on the context, may cover special schools and grant-aided schools. To point the difference it may be mentioned that whereas the national overall pupil/teacher ratio (CFTE) for secondary schools at January 1968 was 17·1 the overall ratio of teachers (CFTE) to pupils in the public and grant-aided secondary sector was about 15·3. This distinction becomes important in considering total staffing needs of education authorities and of the country as a whole; but this Part of the Memorandum is concerned only with pupil/teacher ratios of individual schools in the education authority sector.

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* Throughout the Memorandum, references to secondary schools should be taken as including secondary departments unless the context clearly requires otherwise.

† The *overall pupil/teacher ratio* for aggregations of schools is the ratio of the total numbers of pupils to the total numbers of teachers, as distinct from the *average pupil/teacher ratio* which is the average of the ratios of the individual schools. The overall ratio will be used throughout this Memorandum.

1.7 Properly, the pupil/teacher ratio should be expressed in the form x:1 indicating a ratio of x pupils to one teacher. For convenience, only the left-hand term will be used: i.e. a ratio of 17·5 means a ratio of 17·5 pupils to one teacher. It will be convenient also to refer to relatively unfavourable ratios as "high" and relatively favourable ratios as "low"; for example, using this convention, 13·5 is a low ratio and 19·5 a high ratio in comparison with the national overall ratio (CFTE) of 17·1.

Factors related to pupil/teacher ratios

1.8 The factors affecting pupil/teacher ratios in schools are many and diverse, and their inter-relationship extremely complex. This Part of the Memorandum is concerned to examine the relationship between the pupil/teacher ratio and certain broad factors, namely the size, type, denomination and geographical distribution of the schools.

Relationship between pupil/teacher ratio and size of school

1.9 There were at January 1968, 603 secondary schools in Scotland, with rolls ranging in size from fewer than 10 pupils to upwards of 1,700. For statistical purposes these schools are grouped in six broad organisational types. These types, and the numbers of schools of each type, are as follows:

Type 1	(227 schools)	Non-certificate courses only	3- and 4-year secondary schools
2	(16 schools)	Non-certificate and first years of O grade courses	
3	(76 schools)	Non-certificate and whole of O grade courses	
4	(61 schools)	Non-certificate, O grade and first years of H grade ("junior high schools")	
5	(156 schools)	All courses including H grade to 5th or 6th year ("comprehensive schools")	
6	(67 schools)	Certificate courses only ("senior secondary" or "selective 6-year schools")	

1.10 Table I shows the distribution of schools by size and type, and the pupil/teacher ratios. In this case the "all-teacher full-time equivalent" ratio has been sued, i.e. uncertificated teachers have been included.

TABLE I

Number of schools and pupil/teacher ratios (all FTE) by size and type of school

Roll of school	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		All schools			
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	Number of pupils	Number of teachers	PTR
1–49	73	10·7	4	5·9	—	—	—	—	—	—	—	—	77	2094	204·2	10·3
50–74	33	12·4	3	14·0	1	9·7	4	9·3	—	—	—	—	41	2466	205·2	12·2
75–99	25	14·1	3	13·9	—	—	5	12·7	2	12·7	—	—	35	3043	220·9	13·8
100–199	38	13·8	4	17·0	6	11·8	10	13·3	6	12·5	—	—	64	9143	681·2	13·4
200–499	44	14·9	2	13·6	22	13·9	24	14·6	31	13·6	2	17·1	125	42764	2990·5	14·3
500–799	12	18·5	—	—	30	14·8	10	16·4	44	15·5	21	16·0	117	76152	4837·2	15·7
800–1199	2	26·0	—	—	16	16·5	8	16·8	53	16·5	35	16·0	114	111978	6815·5	16·4
1200 & over	—	—	—	—	1	15·6	—	—	20	16·9	9	18·5	30	41073	2366·1	17·4
All schools	227	15·1	16	13·2	76	15·1	61	15·4	156	16·0	67	16·5	603	288713	18320·8	15·8

KEY TO TYPES:

1. Non-certificate courses only
2. Non-certificate and first years of O grade
3. Non-certificate and O grade
4. Non-certificate, O grade and first years of H grade
5. Comprehensive
6. Certificate courses only.

1.11 Table I shows that a broad relationship does exist between the size of a school and its pupil/teacher ratio, and that this holds good for each of the main types of school*. This table supports the belief that in general the larger the school the more economical it is to staff.

1.12 Of particular note, perhaps, are the low overall ratios of the smaller schools. Schools with fewer than 500 pupils, for example, which account for more than half of all secondary schools and almost a quarter of teachers in secondary schools, have an overall ratio (all FTE) of 13·7 compared with the national overall ratio for all schools of 15·8. The majority of smaller schools, as Table I shows, are 3- or 4-year secondary schools, although it is of interest to note that 39 comprehensive schools have fewer than 500 pupils. As might be expected, the majority of small secondary schools are in rural areas, but as Table II indicates, there are a number of small secondary schools in urban areas also.

TABLE II

Secondary schools with fewer than 500 pupils in cities and in towns of 20,000 or more population

	Roll of school		
	Under 300	300–499	*Total under* 500
Aberdeen	4	1	5
Dundee	—	1	1
Edinburgh	1	3	4
Glasgow	5	12	17
Towns of 20,000 or more population	15	14	29
	25	31	56

1.13 It may be expected that in course of time, many of the smaller secondary schools, particularly in the cities and towns, will disappear or be integrated into larger units allowing for greater economy of staffing.

Relationship between pupil/teacher ratio and type of school

1.14 The question whether the pupil/teacher ratio for a given size of school varies with the type of school is obviously of considerable importance. In fact, however, Table I shows that no clear relationship appears to exist. It is true that many individual cases of obvious disparity can be cited—for example, between selective 6-year schools and comprehensive or 4-year secondary schools within the same town—but such disparities are by no means consistent and are in many cases due to factors other than the organisation of the school. Whether a particular type of school ought to have a more favourable ratio than another type is a different matter which is touched upon in Part II.

Comparison of pupil/teacher ratios in Roman Catholic and non-denominational schools

1.15 It is known that in many areas Roman Catholic schools are more difficult to staff than non-denominational schools. In order to throw light on the problem, comparisons have been made of pupil/teacher ratios as between Roman Catholic and non-denominational schools. Table III gives a comparison by size and type of school for Scotland as a whole. As the analysis is concerned with comparing levels of qualified staff the "certificated full-time equivalent" (CFTE) ratio has been used.

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* The relationship between size of school and pupil/teacher ratio holds good also for Roman Catholic and for non-denominational schools: see Table III.

TABLE III

Number of schools and pupil/teacher ratios (CFTE) by size and type of school, for Roman Catholic, non-denominational and all schools

Roman Catholic schools

Roll of school	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		All schools	
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
1–49	2	10·8	—	—	—	—	—	—	—	—	—	—	2	10·8
50–74	3	21·0	—	—	1	11·3	—	—	—	—	—	—	4	16·9
75–99	4	16·1	—	—	—	—	—	—	—	—	—	—	4	16·1
100–199	8	16·7	—	—	2	14·4	—	—	1	13·2	—	—	11	15·7
200–499	18	21·5	—	—	5	15·5	—	—	—	—	—	—	23	19·9
500–799	5	25·7	—	—	4	20·0	—	—	5	15·8	7	18·5	21	19·1
800–1199	2	31·2	—	—	6	22·9	—	—	10	20·4	3	18·9	21	21·4
1200 & over	—	—	—	—	—	—	—	—	5	19·0	4	20·7	9	19·8
All schools	42	22·6	—	—	18	20·2	—	—	21	19·0	14	19·5	95	20·0

Non-denominational schools

Roll of school	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		All schools	
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
1–49	71	12·2	4	7·2	—	—	—	—	—	—	—	—	75	11·8
50–74	30	14·2	3	14·1	—	—	4	10·6	—	—	—	—	37	13·7
75–99	21	15·9	3	16·0	—	—	5	13·2	2	12·7	—	—	31	15·1
100–199	30	17·7	4	20·2	4	12·7	10	13·8	5	12·6	—	—	53	15·7
200–499	26	18·0	2	15·7	17	15·5	24	15·8	31	14·1	2	17·5	102	15·6
500–799	7	22·8	—	—	26	16·0	10	17·8	39	16·1	14	15·4	96	16·5
800–1199	—	—	—	—	10	17·7	8	18·3	43	16·8	32	16·1	93	16·8
1200 & over	—	—	—	—	1	17·8	—	—	15	18·0	5	18·3	21	18·1
All schools	185	17·4	16	15·2	58	16·3	61	16·7	135	16·4	53	16·2	508	16·5

TABLE III *Contd.*

All schools

Roll of school	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		All schools	
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
1–49	73	12·1	4	7·2	—	—	—	—	—	—	—	—	77	11·7
50–74	33	14·6	3	14·1	1	11·3	4	10·6	—	—	—	—	41	14·0
75–99	25	16·0	3	16·0	—	—	5	13·2	2	12·7	—	—	35	15·2
100–199	38	17·5	4	20·2	6	13·3	10	13·8	6	12·7	—	—	64	15·7
200–499	44	19·2	2	15·7	22	15·5	24	15·8	31	14·1	2	17·5	125	16·2
500–799	12	23·8	—	—	30	16·5	10	17·8	44	16·0	21	16·4	117	16·9
800–1199	2	31·2	—	—	16	19·3	8	18·3	53	17·4	35	16·3	114	17·4
1200 & over	—	—	—	—	1	17·8	—	—	20	18·2	9	19·4	30	18·6
All schools	227	18·9	16	15·2	76	17·0	61	16·7	156	16·8	67	16·9	603	17·1

1.16 Table III shows that in general Roman Catholic schools are much less well staffed than non-denominational schools. Because of differences in the relative distribution of the two sets of schools by size and type—there are proportionately fewer small R.C. schools, for example—it is not possible to make a wholly valid comparison between the national overall ratios. It is, however, clear that for each size/type category, with minor exceptions, Roman Catholic schools are less well staffed. To some extent this may be due to the fact that Roman Catholic schools are found predominantly in areas of general staffing difficulty, but within these areas (with the exception of Ayrshire) Roman Catholic schools tend to be significantly worse-staffed than other schools, as Table IV shows.

1.17 While other factors may be present, there can be no doubt that the striking disparity which clearly exists in pupil/teacher ratios between Roman Catholic and non-denominational schools is due essentially to the greater shortage of Roman Catholic teachers.

Geographical distribution of schools

1.18 Because of differences in the distribution of schools by size, type and denomination, overall comparisons of pupil/teacher ratios between education authorities may be misleading. Table V gives a more valid basis for comparison.

1.19 Table VI, giving an analysis of pupil/teacher ratios of schools in the four cities and in a number of towns and urban areas, throws more light on geographical and denominational differences.

1.20 The table brings out clearly the concentration of high pupil/teacher ratios (i.e. over 20·0) in the industrial areas of Lanarkshire and the burghs of Greenock and Port Glasgow. The contrast between these areas and the industrial towns of the Forth Valley, Fife and Midlothian is very marked. In Glasgow, Dunbarton and West Lothian the problem is mainly confined to the Roman Catholic schools: in the case of non-denominational schools the overall position in Glasgow is not unfavourable, and only in one sector of the city is the position significantly worse than the national average for all schools. The table also brings out the existence of a ring of relatively well-staffed schools in the county areas immediately adjacent to Glasgow (Bearsden/Milngavie, Lenzie/Kirkintilloch, Bishopbriggs, and Giffnock/Thornliebank/Clarkston), throwing into sharper relief the unfavourable position of schools in the other parts of these counties. The exceptionally favoured position of Aberdeen City is also clearly evident from the table.

1.21 The reasons for the disparities between geographical areas call for further investigation. It is obvious that some areas are likely to be more attractive to teachers than others, but the extent to which the disparities may be due to other causes, such as authorities' staffing policies, is open to conjecture.

Disparity in pupil/teacher ratios between individual schools

1.22 The analyses so far discussed in this section have brought out a number of broad factors which are clearly related to pupil/teacher ratio, namely the size, denomination and geographical location of the school. Of at least equal importance, however, is the wide disparity which exists between schools within each of the broad categories studied. Table VII shows the distribution of schools by range of pupil/teacher ratio for different sizes and types of school.

TABLE IV

Comparison of pupil/teacher ratios of Roman Catholic and non-denominational schools in selected areas of relatively high general teaching shortage

Education Authority		Type of school								All schools	
		Types 1, 2		Types 3, 4		Type 5		Type 6			
		Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
Glasgow	R.C.	7	24·4	—	—	9	19·4	5	18·9	21	19·9
	Non-denominational	11	17·8	6	16·6	20	16·6	10	16·1	47	16·6
Lanark	R.C.	17	22·7	4	25·4	—	—	4	21·0	25	22·6
	Non-denominational	19	23·8	10	20·7	7	20·3	6	18·8	42	20·6
Renfrew	R.C.	6	24·2	1	29·0	—	—	3	20·5	10	22·9
	Non-denominational	8	20·2	9	19·7	1	19·7	6	16·9	24	18·6
Dunbarton	R.C.	1	19·3	1	22·5	3	21·2	—	—	5	21·4
	Non-denominational	5	16·6	—	—	6	15·0	2	15·6	13	15·4
Ayr	R.C.	2	19·0	1	17·4	4	16·8	—	—	7	17·1
	Non-denominational	20	17·3	11	17·5	5	18·7	4	17·2	40	17·7

TABLE V

Numbers of schools and overall pupil/teacher ratios (CFTE) by size of secondary school

Education Authority	Roll of school											
	Under 100		100–499		500–799		800–1199		1200 or more		All schools	
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
Aberdeen	—	—	5	11·0	4	12·2	6	14·8	—	—	15	13·5
Dundee	—	—	1	13·0	5	15·5	5	16·2	1	16·8	12	15·9
Edinburgh	—	—	4	16·6	10	16·8	8	17·4	3	16·9	25	17·0
Glasgow	—	—	17	15·9	15	18·0	27	17·4	9	19·2	68	17·7
Aberdeen	26	13·7	7	13·5	2	14·9	3	17·3	—	—	38	15·0
Angus	5	17·8	3	14·7	3	16·1	2	16·4	—	—	13	16·0
Argyll	6	10·5	2	15·7	2	16·3	1	16·6	—	—	11	15·4
Ayr	6	12·5	27	17·2	8	17·7	5	18·2	1	19·0	47	17·6
Banff	11	11·8	2	17·5	3	15·9	—	—	—	—	16	15·1
Berwick	2	10·7	2	12·5	1	15·3	—	—	—	—	5	13·7
Bute	1	6·0	2	13·8	—	—	—	—	—	—	3	13·2
Caithness	—	—	—	—	—	—	2	16·3	—	—	2	16·3
Clackmannan	—	—	4	15·3	2	16·2	—	—	—	—	6	15·8
Dumfries	2	14·1	8	14·9	2	16·6	2	17·7	—	—	14	16·4
Dunbarton	—	—	7	15·8	1	14·7	10	17·3	—	—	18	16·9
East Lothian	1	14·1	2	14·4	3	16·8	—	—	—	—	6	15·9
Fife	—	—	6	14·5	6	15·4	5	14·7	6	16·2	23	15·4
Inverness	21	15·7	5	16·6	1	18·4	1	19·1	1	19·6	29	17·8
Kincardine	2	12·1	2	14·5	1	17·1	—	—	—	—	5	15·4
Kirkcudbright	1	12·0	5	14·4	—	—	—	—	—	—	6	14·2
Lanark	6	28·0	31	21·2	11	20·5	14	21·1	5	22·0	67	21·2
Midlothian	2	10·4	—	—	6	15·1	1	15·9	1	18·4	10	15·6
Moray & Nairn	1	20·0	4	15·5	2	16·5	—	—	1	19·9	8	17·3
Orkney	11	9·9	1	16·2	1	17·4	—	—	—	—	13	15·1
Peebles	1	11·6	—	—	1	16·6	—	—	—	—	2	15·9
Perth & Kinross	8	13·3	12	14·2	2	16·5	1	14·4	1	19·4	24	15·4
Renfrew	2	15·5	10	19·4	13	19·4	8	19·9	1	20·0	34	19·6
Ross & Cromarty	17	15·7	4	13·9	—	—	2	16·4	—	—	23	15·4
Roxburgh	3	12·6	2	14·6	—	—	1	18·3	—	—	6	16·3
Selkirk	—	—	1	16·0	—	—	1	16·5	—	—	2	16·3
Stirling	—	—	3	16·9	7	16·4	6	16·2	—	—	16	16·3
Sutherland	6	11·6	2	13·1	—	—	—	—	—	—	8	12·6
West Lothian	2	18·0	5	13·6	2	16·1	3	18·3	—	—	12	16·6
Wigtown	—	—	1	13·6	3	15·3	—	—	—	—	4	15·2
Zetland	10	10·1	2	18·1	—	—	—	—	—	—	12	15·0
Total (Scotland)	153	13·7	189	16·0	117	16·9	114	17·4	30	18·6	603	17·1

TABLE VI

Overall pupil/teacher ratios (CFTE) in cities and selected urban areas

	Roman Catholic schools		Non-denominational schools		All schools	
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
Cities:						
Aberdeen	1	9·6	14	13·6	15	13·5
Dundee	3	17·9	9	15·2	12	15·9
Edinburgh	4	19·1	21	16·8	25	17·0
Glasgow: Postal districts						
C1–5, S.E.	5	19·6	10	15·7	15	17·3
W1–5, N.W.	4	18·2	9	16·6	13	17·0
N1–2	3	24·4	5	19·3	8	21·5
E1–4	3	20·4	8	17·2	11	18·0
S1–5, SW1–3	6	19·3	15	16·3	21	17·2
All Glasgow	21	19·9	47	16·6	68	17·7
West Central Scotland						
Ayrshire						
Ayr	1	14·5	4	18·4	5	17·6
Kilmarnock	1	17·6	6	17·4	7	17·4
Cumnock/Auchinleck/New Cumnock	1	17·4	3	20·1	4	19·8
All Ayrshire	7	17·1	40	17·7	47	17·6
Dunbartonshire						
Clydebank	1	22·5	3	16·0	4	17·7
Dumbarton	2	22·3	2	15·6	4	19·4
Lenzie/Kirkintilloch	1	19·6	2	13·9	3	16·1
Bearsden/Milngavie	—	—	2	13·8	2	13·8
Vale of Leven	—	—	1	19·9	1	19·9
All Dunbartonshire	5	21·4	13	15·4	18	16·9
Lanarkshire						
Airdrie	1	22·6	2	22·0	3	22·1
Coatbridge	4	25·7	3	20·6	7	23·3
Hamilton	3	23·5	3	18·4	6	20·7
Motherwell and Wishaw	3	20·8	5	19·5	8	19·9
Rutherglen	1	16·2	2	20·6	3	20·0
Bellshill	1	18·5	1	23·2	2	22·1
Blantyre	1	23·1	1	28·0	2	25·6
Cambuslang	1	28·9	1	35·2	2	32·7
East Kilbride	1	18·7	3	21·0	4	20·8
Bishopbriggs	—	—	1	14·9	1	14·9
All Lanarkshire	25	22·6	42	20·6	67	21·2
Renfrewshire						
Paisley	4	22·3	8	18·1	12	19·3
Greenock	2	25·0	5	20·6	7	22·2
Port Glasgow	1	26·3	1	25·8	2	26·0
Gourock	—	—	1	15·2	1	15·2
Johnstone	1	15·4	1	19·7	2	18·6
Giffnock/Thornliebank/Clarkston	—	—	3	14·8	3	14·8
All Renfrewshire	10	22·9	24	18·6	34	19·6

TABLE VI—*Contd.*

	Roman Catholic schools		Non-denominational schools		All schools	
	Number of schools	PTR	Number of schools	PTR	Number of schools	PTR
East Central Scotland						
Stirlingshire						
Stirling	1	19·1	2	16·8	3	17·5
Falkirk	1	15·5	3	16·5	4	16·3
Grangemouth	—	—	2	16·6	2	16·6
Denny	—	—	1	13·2	1	13·2
Larbert	—	—	1	15·9	1	15·9
All Stirlingshire	3	17·7	13	16·1	16	16·3
West Lothian						
Bathgate	1	23·0	1	14·9	2	18·0
Linlithgow	—	—	1	15·6	1	15·6
Whitburn	—	—	1	19·0	1	19·0
Armadale	—	—	1	10·9	1	10·9
Bo'ness	1	12·7	1	17·6	2	16·9
All West Lothian	3	20·4	9	15·8	12	16·6
Midlothian						
West Calder	1	9·8	1	15·1	2	14·5
Esk Valley	1	14·6	5	15·8	6	15·6
All Midlothian	2	14·1	8	15·8	10	15.6
Fife						
Dunfermline	—	—	3	15·0	3	15·0
Kirkcaldy	1	15·9	4	15·5	5	15·6
Cowdenbeath/Ballingry/Auchterderran	1	20·8	3	16·9	4	17·6
Glenrothes	—	—	3	14·8	3	14·8
Buckhaven/Methil/Leven	—	—	3	15·4	3	15·4
St. Andrews/Anstruther	—	—	2	13·6	2	13·6
All Fife	3	17·2	20	15·3	23	15·4
South and Borders						
Selkirk/Galashiels	—	—	2	16·3	2	16·3
Hawick	—	—	1	18·3	1	18·3
Dumfries	2	14·1	3	17·5	5	17·3
Annan	—	—	1	18·5	1	18·5
Sanquhar/Kirkconnel	—	—	2	17·9	2	17·9
Stranraer	—	—	2	16·5	2	16·5
Kirkcudbright	—	—	1	15·0	1	15·0
North and Highlands						
Perth	1	14·0	3	16·7	4	16·4
Arbroath	—	—	2	16·0	2	16·0
Stonehaven	—	—	1	17·1	1	17·1
Peterhead	—	—	2	17·6	2	17·6
Elgin	—	—	1	19·9	1	19·9
Inverness	1	16·0	3	19·0	4	19·0
Fort William	1	21·0	1	18·4	2	18·7
Stornoway	—	—	1	17·8	1	17·8
Wick/Thurso	—	—	2	16·4	2	16·4
Kirkwall	—	—	1	17·4	1	17·4
Lerwick	—	—	1	17·8	1	17·8
Oban	—	—	1	16·6	1	16·6
Dunoon	—	—	1	15·7	1	15·7
Rothesay	—	—	1	13·9	1	13·9
All Scotland	95	20·2	508	16·2	603	17·1

TABLE VII

Number of schools by pupil/teacher ratio (CFTE) for different sizes and types of school, Scotland

	TYPE OF SCHOOL																											
	Types 1–4							Type 5							Type 6							All Types						
	PTR							PTR							PTR							PTR						
	< 12	12– 14	14– 16	16– 18	18– 20	≥ 20	All	< 12	12– 14	14– 16	16– 18	18– 20	≥ 20	All	< 12	12– 14	14– 16	16– 18	18– 20	≥ 20	All	< 12	12– 14	14– 16	16– 18	18– 20	≥ 20	All
(a) *All schools*																												
Under 100	64	23	14	10	11	29	151	1	—	1	—	—	—	2	—	—	—	—	—	—	—	65	23	15	10	11	29	153
100– 499	9	25	28	29	16	43	150	7	10	11	6	2	1	37	—	—	—	1	1	—	2	16	35	39	36	19	44	189
500– 799	2	4	7	13	8	18	52	—	2	19	19	4	—	44	—	1	9	5	4	2	21	2	7	35	37	16	20	117
800–1199	—	1	3	5	7	10	26	—	3	9	20	13	8	53	—	4	12	8	10	1	35	—	8	24	33	30	19	114
1200 & over	—	—	—	1	—	—	1	—	—	3	3	10	4	20	—	—	2	—	2	5	9	—	—	5	4	12	9	30
All sizes	75	53	52	58	42	100	380	8	15	43	48	29	13	156	—	5	23	14	17	8	67	83	73	118	120	88	121	603
(b) *R.C. schools*																												
Under 100	2	1	1	1	2	3	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	1	1	2	3	10
100– 499	1	5	2	4	8	13	33	—	1	—	—	—	—	1	—	—	—	—	—	—	—	1	6	2	4	8	13	34
500– 799	—	—	1	—	1	7	9	—	—	3	2	—	—	5	—	—	—	2	3	2	7	—	—	4	4	4	9	21
800–1199	—	—	—	—	1	7	8	—	—	—	1	4	5	10	—	—	1	—	1	1	3	—	—	1	1	6	13	21
1200 & over	—	—	—	—	—	—	—	—	—	—	1	3	1	5	—	—	—	—	1	3	4	—	—	—	1	4	4	9
All sizes	3	6	4	5	12	30	60	—	1	3	4	7	6	21	—	—	1	2	5	6	14	3	7	8	11	24	42	95
(c) *Non-denominational schools*																												
Under 100	60	22	14	11	9	25	141	1	—	1	—	—	—	2	—	—	—	—	—	—	—	61	22	15	11	9	25	143
100– 499	8	17	27	28	7	30	117	7	9	11	6	2	1	36	—	—	—	1	1	—	2	15	26	38	35	10	31	155
500– 799	2	4	7	12	7	11	43	—	2	16	17	4	—	39	—	1	9	3	1	—	14	2	7	32	32	12	11	96
800–1199	—	1	3	5	6	3	18	—	3	9	19	9	3	43	—	4	11	8	9	—	32	—	8	23	32	24	6	93
1200 & over	—	—	—	1	—	—	1	—	—	3	3	7	2	15	—	—	2	—	1	2	5	—	—	5	4	8	4	21
All sizes	70	44	51	57	29	69	320	8	14	40	45	22	6	135	—	5	22	12	12	2	53	78	63	113	114	63	77	508

1.23 This Table brings out the wide differences in pupil/teacher ratios between schools of similar size, type and denomination. This disparity is further illustrated by the fact that while schools of over 500 pupils with ratios of 20·0 or over are concentrated in a few areas there are significant numbers of schools in the same areas with very favourable ratios.

TABLE VIII

Number of schools with 500 or more pupils having pupil/teacher ratios (CFTE) (A) of 20·0 or over, and (B) less than 16·0

	(A)			(B)		
	R.C. schools	Non-denominational schools	All schools	R.C. schools	Non-denominational schools	All schools
Glasgow	8	3	11	—	11	11
Lanark	6	10	16	—	2	2
Renfrew	6	6	12	—	3	3
Dundee	1	—	1	—	6	6
Edinburgh	1	—	1	—	3	3
Ayr	—	1	1	1	1	2
Dumfries	1	—	1	—	2	2
Dunbarton	1	—	1	—	4	4
Fife	1	—	1	1	11	12
West Lothian	1	—	1	—	2	2

1.24 The range of pupil/teacher ratios varies even more widely than the figures in Tables VII and VIII suggest. Excluding schools with fewer than 300 pupils, ten schools—all 4-year schools—had ratios (CFTE) of 28·0 or over, including one in Glasgow (38·7), two in Renfrewshire (32·7 and 29·0) and seven in Lanarkshire (35·2, 31·9, 29·3, 29·1, 29·1, 28·9 and 28·0). Amongst comprehensive schools, the three schools with the highest ratios were in Dunbartonshire (26·7), Lanarkshire (23·2) and West Lothian (23·0) respectively, and amongst selective 6-year schools were one school in Renfrewshire with 24·0 and two in Lanarkshire with 23·1 and 22·5 respectively. At the other end of the scale were nine schools of more than 300 pupils with ratios (CFTE) better than 12·0, including three in Aberdeen City (10·9, 11·3 and 11·9), two in Glasgow (11·6 and 11·9), two in Fife (10·6 and 11·9) and one each in Aberdeenshire (11·0) and West Lothian (10·9). Of these nine schools four were 4-year schools and five were comprehensive.

1.25 Amongst the smaller schools, individual cases of very high CFTE ratios can be misleading where they have resulted from the temporary employment of an uncertificated teacher in a two- or three-teacher school, but the very large number of small schools in Lanarkshire with unfavourable CFTE ratios (9 out of 14 schools with 200 or fewer pupils had ratios of 20·0 or higher) is undoubtedly significant. Thirty-seven schools in all had ratios (CFTE) of less than 10·0; of these all except one had fewer than 200 pupils, the exception being a school in Aberdeen City with just over that number.

1.26 The following Table shows, for certain areas and for schools of 200 pupils or more, the percentage of schools with pupil/teacher ratios (CFTE) worse than the national average for their particular size range.

TABLE IX

Percentage of schools of 200 or more pupils in certain areas having pupil/teacher ratios worse than (i.e. above) national average for size range of school

	% of schools worse than national average	*% of schools more than 25% above national average*
Aberdeen City	—	—
Dundee	25·0	—
Edinburgh	40·0	4·0
Glasgow	60·3	12·5
Aberdeenshire	27·3	—
Ayr	77·4	9·7
Dunbarton	50·0	12·5
Fife	30·4	4·3
Lanark	94·3	43·4
Midlothian	12·5	—
Renfrew	75·0	42·9
Stirling	25·0	—
West Lothian	42·9	14·3

Effect of applying notional pupil/teacher ratios to individual schools

1.27 It is of interest to assess what would be the effect of applying to individual schools in education authority areas a set of common pupil/teacher ratios. This has been done for all secondary schools, using the following alternative sets of notional ratios; set C accords approximately with the present overall pupil/teacher ratio (CFTE) as shown in Table III on page 12; set A accords approximately with the present overall pupil/teacher ratio (all FTE) as shown in Table I on page 9. The results of applying these notional ratios are given in Appendix A.

Roll of school	Notional ratio			
	A	B	C	D
1– 49	11·0	11·5	12·0	12·5
50– 74	13·0	13·5	14·0	14·5
75– 99	14·0	14·5	15·0	15·5
100– 499	15·0	15·5	16·0	16·5
500– 799	16·0	16·5	17·0	17·5
800–1199	16·5	17·0	17·5	18·0
1200 & over	17·0	17·5	18·0	18·5
All schools	16·0	16·5	17·0	17·5

Conclusion

The following main points emerge from the analysis:

(i) there appears to be a broad relationship between the size of a school and its pupil/teacher ratio; in general, the larger the school the more economical it is to staff. There appears to be no clear relationship between pupil/teacher ratio and type of school;

(ii) pupil/teacher ratios are in general significantly higher in Roman Catholic than in non-denominational schools;

(iii) geographical factors are important. Pupil/teacher ratios in the industrial areas of Lanarkshire and in Greenock and Port Glasgow are significantly higher than elsewhere;

(iv) disparities exist between individual schools which are not wholly explicable in terms of the factors mentioned;

(v) apart from the size of the school, the wide disparities in pupil/teacher ratios do not appear to be justified by any objective staffing criteria.

Part II: Study of Staffing and Organisation of Selected Secondary Schools

Origin and scope of study

2.1 In April 1967 the Department, after consultation with the Association of Directors of Education, decided to undertake a study in depth of the staffing and organisation of a number of secondary schools in several education areas with a view to throwing light on the factors affecting staffing in different types and sizes of school and, if possible, to establishing general principles upon which guidance might be offered on the deployment of teaching staff.

2.2 After a pilot exercise the main study was carried out in October 1967, 47 schools being selected in 11 areas. There is no reason to suppose that circumstances have changed significantly since the study was made. In selecting the sample an endeavour was made to choose schools differing in respect of the following features:

(1) Pupil/teacher ratio.
(2) Type (e.g. comprehensive, selective 6-year school).
(3) Size.
(4) Denomination.
(5) Geographical location.
(6) General staffing difficulty of area.

Thus amongst the schools selected were some with pupil/teacher ratios around the national average, and others with relatively high or low ratios. Of the 47 schools, 15 were comprehensive, 14 were selective 6-year schools, and 18 were junior high schools or 4-year secondary schools. Sizes of schools ranged from under 100 to over 1,500 pupils. Locations represented included city centres and suburbs, large and small industrial towns, seaside towns and rural centres. Three grant-aided schools were included. Several pairs of schools with features in common were chosen to assist comparison.

2.3 While the schools were selected as being representative in those respects which it was desired to study they did not constitute a statistical sample of Scottish secondary schools. Nor was it possible to find a "typical" or "model" school against which the other schools could be measured. Generalisations from the data collected must therefore be made with caution.

2.4 A list of the selected schools, showing their main characteristics, is given in Appendix B. Individual schools have not been identified by name but have been given a code number*. References made to particular schools will be by code number.

The information collected in the study was in three main parts:

(i) general statistical information about the organisation and staffing of the school;
(ii) particulars about individual teachers, including the teacher's normal weekly timetable;

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* In the code references, C stands for a comprehensive school, S for a selective 6-year school, and F for a 4-year school.

(iii) comments by the head teacher, in narrative form, covering a number of aspects not readily amenable to tabulation.

Factors affecting staffing

2.5 The head teacher in a secondary school has to marshal given resources of pupils, accommodation and staff into teaching groups for various subjects and activities. In carrying out this task the head teacher is subject to a number of constraints. These may include constraints caused by the nature and limitations of the resources (e.g. shortage of teachers or accommodation); they also include constraints imposed by regulation (e.g. maximum class sizes), by education authority policy, and by the expectations of pupils and parents (e.g. as regards the offering of particular subjects). It is unlikely that in any two schools, no matter how superficially alike, the particular "mix" of resources will be the same, or that the constraints will have equal force. Consequently the pattern that emerges will be peculiar to the individual school, and will in turn largely determine the staffing requirements of the school.

2.6 The complexity of the factors affecting staffing could of course be removed by relating the staffing complement of the school to some arbitrary objective measure such as the pupil/teacher ratio. Little evidence was found of such blunt controls actually operating in the schools in the staffing study, and no area is known in which objective measures are consistently applied to determine staffing complements. At present therefore the staffing levels of individual schools appear to be determined not by objective standards but by a variety of fortuitous influences.

2.7 Before looking more closely into the organisation of teaching groups and teacher loads it may be worthwhile to examine the extent to which certain external factors such as the size and type of school and the availability of teachers exert an influence upon staffing.

Size of school

2.8 The analysis of pupil/teacher ratios in all secondary schools made in Part I showed a general tendency for the pupil/teacher ratio to increase with the size of the school. The staffing study has suggested that the main reason for this is simply that the larger the school the easier it is to create teaching groups of reasonable size. In the smaller schools the desire to offer a wide range of course and subject options almost inevitably makes for smaller teaching groups. Compare, for example, the following comprehensive schools, none of which is in an area of serious teacher shortage.

TABLE X

School	Roll	PTR (all FTE)	Average size of teaching groups						Number of S.C.E. subjects taught	
			English	Mathematics	Geography	Latin	German	Homecraft	H grade	O grade*
C15	1500–1600	17·7	26·9	29·1	27·5	22·3	23·6	14·8	20	11
C6	700– 800	16·4	26·1	24·0	21·9	25·1	13·0	14·9	14	6
C2	400– 500	10·5	20·1	17·7	16·6	13·8	6·7	7·4	21	3

* Excluding subjects taught also to H grade.

2.9 There are, however, other factors which affect the relationship between size and pupil/teacher ratio for a given type of school. Difficulty in obtaining staff, for example, may restrict the range of options provided, although if the difficulties are not too acute there will still be a tendency for average class sizes in the smaller schools to be substantially below the Code maximum*. The following school, for example, is similar in size and type to school C2, but has greater difficulty in attracting teachers.

TABLE XI

School	Roll	PTR (all FTE)	Average size of teaching groups						Number of S.C.E. subjects taught	
			English	Mathematics	Geography	Latin	German	Homecraft	H grade	O grade
C1	400– 500	16·5	25·7	26·0	20·5	8·5	3·8	13·7	12	6

2.10 The staffing study included examples of schools generally similar in size and type but with widely different staffing ratios. In some cases (see paragraph 2.17) a high pupil/teacher ratio was associated with staffing difficulty. But in other cases the disparity cannot be attributed wholly, if at all, to this cause. School C9, for example, a comprehensive school of 1,000–1,100 pupils, is situated in an area of reputedly severe staffing difficulty, while school C14, a comprehensive school of 1,400–1,500 pupils, is in an attractive county town; yet the former school has a pupil/teacher ratio (CFTE) of 14·5 and the latter school one of 20·6. Perhaps even more striking is the comparison between schools F9 and F11, which are both junior high schools of 600–700 pupils and are situated within a few miles of each other in the same county. School F9 is described by the head teacher as "slightly overstaffed" but has a pupil/teacher ratio of 18·3 compared with 14·9 for F11. Possible reasons for the disparities in pupil/teacher ratios of schools of similar size and type are discussed later.

2.11 Consideration of the size of the school raises the question whether there is a critical size below which it is not possible to provide a range of courses adequate to the type of school while maintaining reasonable economy in staffing. It is not possible to give a simple answer from the evidence supplied by the staffing study. It is perhaps noteworthy that amongst the schools in the study there was no very marked tendency for the smaller schools to offer a more restricted choice of S.C.E. subjects than the larger schools, as the following table shows:

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* Maximum class sizes prescribed in the Schools (Scotland) Code are:—
20 for classes for practical instruction;
25 for classes for backward or retarded pupils;
30 for classes at stages SIV, SV and SVI;
30 for classes including pupils at more than one yearly stage;
40 for other classes.

TABLE XII

Number of S.C.E. subjects taught in selected staffing study schools

Comprehensive schools				Selective 6-year schools				4-year schools		
School	Roll	Number of subjects at grade		School	Roll	Number of subjects at grade		School	Roll	Number of O grade subjects
		H	O*			H	O*			
C1	400–500	12	6	S1	500–600	12	1	F1	1–99	7
C2	400–500	21	3	S2	600–700	19	5	F2	300–400	15
C3	500–600	18	12	S4	600–700	13	1	F3	300–400	22
C4	600–700	22	4	S5	600–700	19	4	F4	300–400	18
C7	1000–1100	13	1	S6	700–800	20	5	F9	600–700	17
C9	1000–1100	20	2	S7	800–900	26	5	F10	600–700	10
C11	1100–1200	17	—	S10	900–1000	19	4	F11	600–700	17
C13	1200–1300	25	10	S11	900–1000	16	—	F14	800–900	16
C14	1400–1500	16	10	S12	1000–1100	22	6	F15	900–1000	13
C15	1500–1600	20	11	S14	1100–1200	22	4	F16	900–1000	17

* Excluding subjects taught also to H grade.

2.12 In some schools the range of subjects taught has clearly resulted in very small teaching groups, but in others it appears to have been possible to maintain a more economical staffing level by combining small groups and by making use of part-time teachers and of teachers outside their own subject department. The question of the critical minimum size of school is an important one which merits further investigation.

Type of school

2.13 The analysis of pupil/teacher ratios in Part I did not show any significant difference between schools of different types and of comparable size. The staffing study suggests that one reason for this is that in any of the recognised types of secondary school, the schools are far from being homogeneous in a number of respects which are likely to affect pupil/teacher ratios. In the case of schools classified as comprehensive, for example, there may be wide differences between schools in the ability range of the pupils, in the proportions of pupils at different stages, and in the proportions of classes with different statutory maxima. These differences tend to be due to one or more of the following causes:

(i) the socio-economic background of the area from which the pupils are drawn, reflected in the ability range of the pupils and the numbers staying on beyond compulsory leaving age;

(ii) the extent to which the school shares the same catchment area with another school. In some cases a 4-year school may feed abler pupils into the comprehensive school; in other cases the ablest pupils may be "creamed off" the comprehensive school, either as a matter of deliberate policy or because of the attractions of a selective school;

(iii) the fact that the school may be in process of evolving from a more selective form of which traces still persist.

The following examples illustrate the point:

TABLE XIII

	School			
	C3	C8	C9	C10
Catchment area		(see below) (1)		
Creaming off (2)	A	B	A	B
Change of type (3)	—	B	A	B
Pupils in years IV–VI as % of all pupils	33·9	15·0	30·9	9·5
3rd year English—SCE pupils as % of all pupils in year	79	48	66	36
Practical classes as % of all classes	(4)	44	40	45
Pupil/teacher ratio (CFTE)	14·1	19·8	14·5	20·4

(1) C3 Small town and rural hinterland.
C8 Large burgh, mainly industrial.
C9 Inner city suburb, mixed housing.
C10 Outer city suburb, post-war housing.

(2) A Takes some abler pupils from other schools.
B Loses some abler pupils to other schools.

(3) A Formerly senior secondary school.
B Formerly junior secondary school.

(4) Not stated in return.

2.14 Differences due to one or other of the causes mentioned are also found in other types of school included in the staffing study, and may well have affected the staffing of the schools concerned. It is not however possible from the information available to suggest any measure which might take account of these differences.

2.15 There is some evidence from the staffing study to suggest that certificate streams of comprehensive and junior high schools suffer less from staffing shortage and have fewer large classes than non-certificate streams. There are also many examples, however, of 4-year schools with very favourable ratios—in some cases more favourable than those of selective 6-year schools within the same area; and the same can be said of comprehensive compared with selective 6-year schools. Even within particular schools non-certificate streams may have smaller average teaching group sizes than certificate streams (see Appendix C), and in most schools, however hard-pressed, an attempt is made to keep groups of backward pupils within the Code maximum of 25 pupils.

2.16 The question arises whether particular types of school ought to have more favourable staffing ratios than other types. It may be suggested, for example, that:

(i) schools with large proportions of certificate pupils need more favourable staffing ratios because of the wider range of options that have to be offered to such pupils;

(ii) 6-year schools need more favourable ratios than 4-year schools because of the need for smaller teaching groups in the upper stages.

Clearly judgments as to the relative needs of certificate and non-certificate pupils are involved which would repay further investigation. The staffing study confirms however that at the present time there are no clear-cut divisions between types of school which could justifiably be reflected in differential ratios. The question whether the yearly stage, rather than the whole school, could be taken as the unit for determining staffing needs is a different matter which might well be further investigated.

Shortage of teachers

2.17 Shortage of certificated teachers may be manifested in various ways—in high pupil/teacher ratios, oversize classes, and the employment of uncertificated staff, for example. There is no doubt that an acute shortage of teachers is the dominant factor in the high pupil/teacher ratios of the following staffing study schools:

TABLE XIV

School	Type	PTR		Uncertificated teachers as % of all teachers	Number of oversize classes				Additional teachers required*
		CFTE	All FTE		Practical	Other		Total	
						Years I–III	Years IV–VI		
C11	Comprehensive	23·1	20·0	13·5	31	73	8	112	13
C13	Comprehensive	24·5	18·2	25·8	89	76	—	165	19
S12	Selective 6-year	23·7	23·7	—	36	—	—	36	9
F8	4-year	28·3	24·3	14·1	32	40	3	75	7
F14	4-year	23·7	18·9	20·3	23	34	3	60	12
F16	4-year	23·5	22·1	6·2	60	44	3	107	14

* as estimated by head teacher.

2.18 To illustrate the real difficulties which can exist in particular schools, the following is an extract from comments made by the head teacher of school F8:

> "Owing to lack of teachers in science and mathematics certain classes do not get science . . . . . . In the commercial department most of the groups are oversize. In the English department there is only one full-time certificated teacher plus one part-time graduate for one day . . . . . . Experienced primary teachers have been appointed to fill the gaps . . . . . . A second year class has no geography or history. Two second year classes have a variety of English teachers owing to timetabling difficulties . . . . . . Due to shortage, rolls of four modified classes are 37, 30, 30, 34."

The *average* class size in science in this school is 34·9, in music and physical education 34·7. No foreign language is taught.

2.19 In most of the schools in the staffing study, however, it is much less easy to assess the importance of teacher shortage as a factor in determining the pupil/teacher ratio. None of the obvious indicators of shortage is a reliable guide. The selective 6-year secondary school with the largest number of oversize classes, for example, was a grant-aided school of the highest academic reputation with a pupil/teacher ratio of 15·6. The matter of oversize classes is further discussed in paragraph 2.38. In some cases the employment of uncertificated teachers may be an alternative to large classes: for example 10% of teachers in school S1 and 16% of those in C1 were uncertificated, but neither school had any oversize classes. School F4 with 12·5% uncertificated teachers had a favourable pupil/teacher ratio (CFTE) of 15·3, and school F17 with 9·4% uncertificated teachers had a ratio (CFTE) of 15·9. The school with the highest percentage of uncertificated teachers—school C13 with 25·8%—also offered the widest range of S.C.E. subjects of any comprehensive or selective 6-year school in the staffing study: it would appear that the employment of uncertificated teachers has been preferred to restricting the range of options offered. Different policies regarding the employment of uncertificated teachers are reflected also in other schools in Table XIV.

2.20 Information was obtained about staff turnover ratios in the staffing study schools, turnover ratio being defined as the ratio of the number of full-time teachers employed at any time during the previous three years to the number employed at the time of the study. The results showed that schools with high turnover tended to have high pupil/teacher ratios, but this was not so in all cases. Turnover ratios (all full-time staff included) in excess of 3:1 were found in four comprehensive and three 4-year schools. Of these, schools C10, F8 and F16 had very high pupil/teacher ratios, but C7 and C9 had favourable pupil/teacher ratios (CFTE) of 15·0 and 14·5 respectively. (The seventh school, F1, was too small for the turnover ratio to be significant. Schools C11 and C14, with very high pupil/teacher ratios, gave no details of turnover.) Of the 14 comprehensive and 17 4-year schools which gave details of staff turnover, five comprehensive and ten 4-year schools had turnover ratios in excess of 2:1 whereas none of the 13 selective 6-year schools which gave details had turnover ratios in excess of this figure.

2.21 It has already been noted that many schools in areas of reputedly serious teacher shortage have more favourable pupil/teacher ratios than some schools of broadly similar size and type in areas not generally considered unattractive to teachers. The staffing study offered some examples of this. Contrast, for example, the following pairs of schools in which the first is a school in an area of generally high teacher shortage and the second is in an area not reputedly short of teachers.

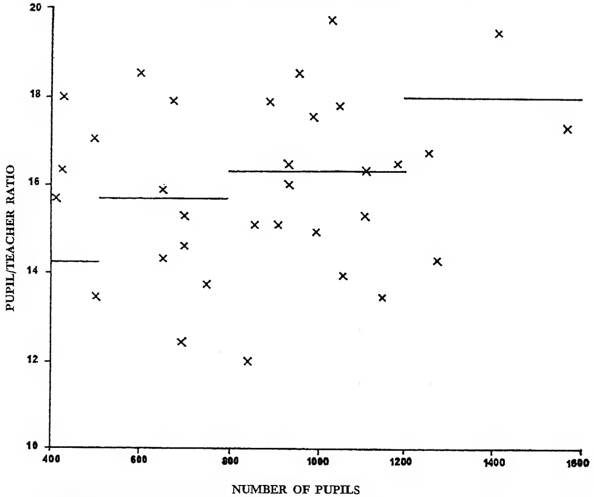
TABLE XV

	School	*Roll*	*PTR (CFTE)*
(a)	C5	700–800	14·5
(b)	C6	700–800	16·4
(a)	C7	1000–1100	15·0
(b)	C14	1400–1500	20·6
(a)	S4	600–700	15·2
(b)	S10	900–1000	18·4
(a)	F11	600–700	15·3
(b)	F10	600–700	17·1

The reasons for these disparities are discussed further in considering the teaching group organisation of the schools.

2.22 Head teachers of schools in the staffing study were asked to estimate the numbers of additional teachers needed (a) to fill vacancies, and (b) to replace uncertificated teachers and those over 70. Pupil/teacher ratios were then calculated on the basis of the total numbers of teachers required if the estimated deficiencies were to be made good. It might have been expected that the resultant pupil/teacher ratios of schools of similar size would tend to even out, but as the diagram below shows, this was far from being the case.

Pupil/teacher ratios which schools in staffing study would have if head teachers' estimates of deficiency were to be made good



Schools under 400 pupils not shown.
Horizontal line indicates present national overall pupil/teacher ratio (all FTE) for size range of school.

2.23 These results suggest that widely different standards of provision are being applied in estimating staffing requirements, and must throw serious doubt on the validity of national shortage statistics based on the aggregation of education authorities' estimates. To illustrate the importance of the point it may be noted that the difference in terms of staffing between a pupil/teacher ratio of 14·0 and one of 18·0 for a school of 1,000 pupils is 16 teachers.

2.24 Certificated teachers are more scarce in some subjects than in others, but no figures have been available of estimated subject shortages in individual schools. It is not of course possible to draw general conclusions about subject shortage from the schools in the staffing study. Some indication of relative shortages in the 47 staffing study schools may however be given by the following table showing total numbers of periods which were taken by uncertificated teachers:

Science	885	Commerce	362	Modern languages	175
Homecraft	693	English	357	Physical education	127
Art	457	Music	256	Religious instruction	124
Mathematics	427	Technical subjects	245	History/geography	122
				Speech and drama	101
				Other subjects	127

2.25 In the light of these figures it is pertinent to draw attention to the very low average teaching group sizes found in many of these subjects in the staffing study schools: see Appendix D.

2.26 Evidence from the staffing study has not brought out any reliable objective means by which "real" shortage can be measured. Undoubtedly certain of the staffing study schools are understaffed by any reasonable standard; and others have genuine difficulties in some departments. But in general staffing demands do not appear to be related to any measurable standards, and it is still an open question how far the national teacher shortage, insofar as it reflects indisputable needs, could be overcome by more equitable distribution, more economical use of teachers, and closer supervision by education authorities. Before a reliable estimate of "real" shortage can be made, this question has to be answered, and there must also be further investigation into, and agreement upon, standards of provision.

Accommodation

2.27 Head teachers of schools in the staffing study were asked to comment on accommodation and any other physical factors which might have an effect on the efficient use of teachers. Some specific examples were quoted by head teachers of instances in which inadequate accommodation limited the provision for particular subjects. For example, in school C6 the number of physical education teachers employed was restricted by the fact that only one gymnasium was available; and in school F8, housed in a converted primary school, the poor accommodation was mentioned as severely restricting the range of subjects to be offered. Two head teachers described their present accommodation as inadequate to enable "Brunton-type" courses to be provided.

2.28 On the other hand, deficiencies in accommodation may, in some cases, lead to uneconomical use of teachers. In school C6, already quoted, several classes had to be kept unduly small because of the lack of sufficient rooms of suitable size. Several of the staffing study schools were in scattered premises and in more than one case the head teacher mentioned this fact as preventing efficient time-tabling.

2.29 Over-generous accommodation may in some cases be a factor in encouraging generous staffing as there may be a tendency to staff a school up to the accommodation available even where it would be more economical to leave some of the rooms unused. None of the head teachers mentioned this factor as applicable in their school, but there is some evidence that it may have been present in one, and possibly more, of the schools studied.

2.30 On the whole, however, there was no strong evidence that accommodation is a major factor in determining the staffing levels of individual schools. Some of the schools described as having inadequate accommodation nevertheless had relatively generous staffing ratios, while there were schools with serious staffing difficulties which were housed in new and adequate accommodation.

Organisation of teaching groups

2.31 It is not easy to explain the wide disparity in pupil/teacher ratios between schools of similar size and type. Analysis of the staffing study schools suggests however that where a school is more generously staffed than another of similar characteristics it is for one or other of the following reasons:

(i) it offers a wider range of course and subject options, and/or introduces options at an earlier stage;
(ii) it has basic classes (e.g. first year English, mathematics, or art) on average substantially below the Code maximum;
(iii) it tends to have small teaching groups in S.C.E. and minority subjects;
(iv) the teachers have more non-teaching time.

2.32 Conversely a more tightly staffed school will tend to show one or other of the following characteristics:

(i) a more restricted range of options, particularly of minority subjects;
(ii) basic classes averaging not much below the Code maximum;
(iii) combinations of small groups or single pupils with larger groups;
(iv) less generous non-teaching time;
(v) generally heavier teaching loads.

2.33 It is not appropriate in this Memorandum to venture upon judgments as to the optimum balance between the two opposing sets of characteristics. It is, however, pertinent to draw attention to differences which exist between schools, from which value judgments may possibly emerge.

2.34 The evidence of the staffing study suggests that where the supply of teachers is relatively favourable there will be a tendency for the first set of characteristics to develop unless firm control is exercised. This is perhaps only natural: few head teachers would not wish to have small teaching groups and be able to offer a wide choice of options. This tendency may however result in a situation exemplified by the following details taken from a comprehensive school of 400–500 pupils:

> First year teaching groups, average size: English 22·0, art 12·2, music 12·2.
> Average teaching group sizes for whole school:
> mathematics (5 full-time teachers) 17·7; science (5 full-time teachers) 11·6; homecraft (4 full-time teachers) 7·4; art (3 full-time teachers) 9·4.
> Many teaching groups of fewer than five pupils.

Further details of average teaching group sizes will be found in Appendix D.

2.35 Generous teaching group arrangements are not however found only in areas with few staffing problems. The following details relate to a 4-year secondary school in an area of general teacher shortage:

English:	6 full-time certificated teachers, 1 full-time and 1 part-time uncertificated teacher. Average class size 20·1.
Science:	3 full-time teachers, average class size 13·8.
Art:	25 teaching groups average size 13·7.
French:	19 teaching groups average size 10·8.
Technical subjects:	average class size 12·5.
Physical education:	average class size 16·0.

Several other schools in the staffing study which show characteristics of generous teaching group organisation are situated in areas of general teacher shortage.

2.36 As one would expect, schools with a tight organisation of teaching groups and a generally high teacher load are commonly found in areas of staffing difficulty, and support the hypothesis that a natural tendency towards small teaching groups and a wide range of options is curbed by the difficulty of obtaining staff. A tight organisation may also be found however in schools in areas with few staffing problems. The following particulars relate to a selective senior secondary school with an excellent record of academic success which is situated in an area which might be expected to be attractive to teachers:

First year teaching groups: English, 4 groups average size 39·5; art, 8 groups average size 19·8.

Average teaching group sizes for whole school: English 29·3; geography 29·5; science 16·5; homecraft 16·4.

2.37 The estimates of staff requirements by head teachers in schools with a relatively generous teaching group organisation tend to be higher than by those in schools with a relatively tight organisation. Schools F9 and F11 are comparable 4-year schools in the same area. School F9 is tightly organised with an overall pupil/teacher ratio (all FTE) of 18·3 while school F11 is loosely organised with a pupil/teacher ratio of 14·9. If school F11 were staffed on the same basis as school F9 it would require only 35·5 teachers whereas its actual complement is 43.4 teachers, and the head teacher estimates a need for two additional members of staff. By contrast, the head teacher of school F9 appears to be satisfied with his complement of 33 teachers.

Sizes of teaching groups

2.38 Most of the schools in the staffing study had some oversize classes*. In the case of some of the schools—e.g. C11, C13, F8, F14 and F16—these affected all levels in the school and were clearly the result of staffing shortage. For most of the schools, however, the number of oversize classes in classroom subjects was not significant, and in many cases only a few isolated classes exceeded the statutory limit and that to a minor extent. Oversize practical classes were found in almost all schools, some in quite substantial numbers in schools with relatively low pupil/teacher ratios. It is of interest to note that the four selective 6-year schools with the largest numbers of oversize classes were all schools of the highest academic reputation and included two grant-aided schools. It would appear from the analysis of the staffing study schools that, except in the few schools of real shortage, oversize classes constituted no great problem and in many cases were preferred to making other timetabling arrangements; this applies particularly to practical classes.

2.39 In years IV–VI most classes in the staffing study schools were much smaller than the Code maximum. A difficulty arises where the exercise of pupils' options results in small numbers of pupils taking a particular subject. The organisation of such pupils can make a significant difference to the pupil/teacher ratio. In most of the staffing study schools some combinations of small groups took place, but this was carried much further in some schools than in others.

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* For maximum class sizes see footnote on page 25.

In those schools characterised by a relatively "loose" organisation, separate groups of two, three or four pupils were not uncommon, especially in minority subjects such as Greek, dress and design, and engineering. There were of course schools in which real staffing difficulties enforced combinations of groups beyond a reasonable limit, but as with other aspects of the study the degree to which small groups were combined did not appear to be very closely related to enforced staffing difficulties but were a matter of policy. It is worth remembering that for a given staffing level, very small teaching groups can only be provided at the expense of correspondingly large ones: 46 pupils can be divided into two groups of 23 pupils or into one group of 44 and one of 2.

2.40 Provision for minority subjects clearly constitutes a major problem in many schools. Some schools in the staffing study were sufficiently favourably placed to employ full-time staff for minority subjects even where this resulted in very low teacher usage. In one school a full-time teacher was employed solely to teach nautical subjects to 23 pupils divided into 7 groups. Very small groups were also found in languages other than French—for example, Greek and German, for which qualified staff are available in many schools but which may in some cases attract few pupils. A real dilemma faces comprehensive and 4-year schools in areas which do not produce a high proportion of pupils in the higher ability range. The endeavour to provide a reasonable choice of courses for the abler pupils may entail the relatively uneconomic use of some staff in schools which find it hard enough to attract teachers.

2.41 The staffing study provided examples of various means which are adopted to make provision for minority subjects without uneconomic use of staff: these included centralisation of provision, provision outside normal school hours, postponement of options until the later years of the school, use of visiting and part-time teachers, combinations of small groups from several stages and special non-timetabled arrangements by individual members of staff. It would seem desirable to make use of such arrangements wherever appropriate. This is a matter which merits further investigation.

2.42 On the whole, small groups resulting from the provision of options in minority subjects are not often found in years I and II where the principle of the common course is making rapid headway. At the time of the staffing study, however, there were several schools in which the availability from the first year of options in such subjects as nautical studies and commerce resulted in some small first year groups and not only in the specific optional subjects. The main cause of relatively uneconomic staffing in the first two years is, however, the provision of classes averaging substantially below the Code maximum in the basic subjects. With the smaller schools which still adopt a form of rigid streaming into SCE, non-SCE and "modified" classes, low average class sizes may be inevitable although uneconomic, but even in the case of some of the larger schools small average classes in basic subjects were found; for example:

School	*1st year English classes*	
	Number	*Average size*
F11	10	23·6
F15	14	21·2
F18	16	24·1

2.43 The existence of differential class size maxima for classroom and practical subjects may encourage a tendency for relatively small practical classes to be formed by simply splitting basic classes which are already well below the maximum for classroom subjects; e.g. two basic classes of 30 pupils each might be split into four of 15 pupils rather than be organised into three groups of 20. The staffing study gave some evidence of this tendency, viz:

School	*1st year classes*			
	English		*Art*	
	Number of groups	*Average size*	*Number of groups*	*Average size*
C7	9	30·0	18	15·0
S7	6	26·5	12	13·3
F13	8	27·4	16	13·7

2.44 It may well be that the relatively small practical classes found in years I and II in some of the smaller schools are difficult to avoid because of timetabling exigencies. Some schools do, however, have average sizes of practical classes nearer to the maximum; the fact that these schools include certain of the grant-aided schools and other schools without major staffing difficulties suggests that this is a matter of deliberate policy. Examples are:

School	*1st year classes*			
	English		*Art*	
	Number of groups	*Average size*	*Number of groups*	*Average size*
C14	10	33·9	19	17·8
C15	13	33·2	24	18·0
S9	5	32·2	9	17·9
S10	4	39·5	8	19·8
F9	6	33·8	11	18·5
F10	8	26·0	12	17·3

Fuller details of average class sizes in the staffing study schools are given in Appendix D.

2.45 In year III a major factor in determining class sizes is the range of course options available: the introduction of options at this stage commonly makes the third year the most expensive in terms of the demand for teachers. Practice appears to vary considerably between schools. In some cases the course options may be limited, while in others the pupils may choose from a large number of combinations of courses. In one of the staffing study schools the 51 third year S.C.E. pupils had a theoretical choice of over 15,000 combinations of subjects. In such circumstances it is obviously difficult to timetable in such a way as to avoid the creation of very small groups.

2.46 The wide disparity in average teaching group sizes between schools, and the very low average in many cases—particularly in the practical and aesthetic subjects—must give rise to concern especially in view of the national shortage of teachers of these subjects and of the fact that accommodation for practical classes is normally provided on the basis of classes of maximum size.

Non-teaching duties of teaching staff

2.47 Analysis of factors affecting pupil/teacher ratios in secondary schools would not be complete without taking into account the periods spent by teachers on duties outwith normal teaching group instruction.* Such duties may be classified as follows:

A Administration, i.e. duties not directly associated with a particular class (those of head teacher, deputy head teacher, woman adviser, head of a subject department, careers master, teacher/librarian, housemaster).

S Supervision, i.e. charge of a group of pupils but with no direct teaching responsibility, e.g. assisting with games, supervising private study or preparation.

O Other non-teaching duties, e.g. marking homework, preparing lessons.

There are no regulations prescribing the amount of time which should be devoted to such duties in a secondary school, nor has any specific guidance been offered by the Department. Non-teaching duties account, however, for a significant proportion of a teacher's time, and it was decided, therefore, to obtain information about the number of non-teaching periods in each teacher's timetable, for each of the three categories mentioned.

2.48 The information obtained was analysed in detail for all 15 comprehensive schools in the survey, and for seven of the selective 6-year schools and seven of the 4-year schools.**

2.49 Taking all 29 schools together, non-teaching duties accounted for 22·1 per cent. of all periods, divided as follows:

Administration	6·0 per cent.
Supervision	1·6 per cent.
Other	14·5 per cent.

Table XVI gives the percentage of non-teaching periods in the 29 schools, together with the pupil/teacher ratios.

The Table shows that the time spent on non-teaching duties in the 29 schools ranged from 15·8% up to 29·7% of the total periods. There was a tendency for some of the more generously staffed schools to have a higher allowance of non-teaching time, but the tendency was not a marked one: for example school F9 shows a higher proportion of non-teaching time than school F6 although it had a less favourable pupil/teacher ratio, and school C10 with a relatively unfavourable pupil/teacher ratio, had an above-average proportion of non-teaching time. Of the five schools with the highest proportions of non-teaching time, (F11, S11, C9, S7 and S2) four were in areas of general staffing difficulty although the schools themselves had favourable pupil/teacher ratios.

2.50 As the Table shows, the proportion of time spent on duties classified as administrative varied from 2·8 per cent. (C6) up to 9 per cent. or more (F11, F12). There was no general tendency for larger schools to have a higher or lower proportion of administrative time than smaller schools.

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* The term "non-teaching duties" is used here for convenience. It is not of course implied that the duties referred to are not an appropriate part of a teacher's work.

** The average amount of non-teaching time in the 47 schools in the staffing study was not significantly different from that in the 29 schools used for the detailed analysis.

TABLE XVI

School	% periods spent on non-teaching duties				PTR	
	A	S	O	Total	(CFTE)	(all FTE)
C1	5·2	2·0	12·2	19·4	19·7	16·5
C2	8·1	0·1	11·4	19·6	11·0	10·5
C3	5·8	1·2	11·8	18·8	14·1	13·8
C4	5·5	1·1	15·6	22·2	16·0	14·6
C5	6·0	0·1	14·3	20·4	14·5	14·4
C6	2·8	1·2	18·1	22·1	16·4	16·2
C7	8·0	2·0	13·4	23·4	15·0	14·7
C8	5·1	1·5	10·2	16·8	19·8	19·8
C9	5·7	1·0	19·2	25·9	14·5	14·2
C10	6·2	1·0	15·5	22·7	20·4	18·9
C11	3·3	0·9	11·6	15·8	23·1	20·0
C12	6·3	0·7	15·7	22·7	18·1	18·1
C13	4·9	1·9	15·1	21·9	24·5	18·2
C14	4·5	1·7	14·1	20·3	20·6	19·4
C15	5·7	1·4	13·2	20·3	18·5	17·7
S2	5·2	1·7	17·8	24·7	14·8	14·8
S3	4·7	2·0	16·0	22·7	18·6	18·3
S5	4·4	2·4	14·3	21·1	15·2	14·9
S6	6·5	4·9	12·6	24·0	17·6	17·6
S7	6·1	4·4	14·6	25·1	11·9	11·7
S10	5·1	1·7	14·0	20·8	18·4	17·3
S11	6·6	1·8	19·1	27·5	16·0	15·3
F4	5·4	0·1	14·8	20·3	15·3	13·4
F5	5·1	0·4	11·0	16·5	17·7	16·6
F6	5·9	1·2	9·9	17·0	17·9	15·5
F9	6·3	0·8	15·5	22·6	20·1	18·3
F11	9·0	0·6	20·1	29·7	15·3	14·9
F12	9·2	2·1	12·3	23·6	14·1	13·2
F14	7·0	0·6	13·0	20·6	25·7	18·9
All schools	6·0	1·6	14·5	22·1	17·4	16·1

A Administration
S Supervision
O Other

2.51 Time spent on "other" non-teaching duties ranged from 9·9 per cent. (F6) to more than double this figure (F11, 20·1 per cent.). In general, the comparison between schools follows the pattern noted above in respect of all non-teaching duties, the five schools with the highest proportions of "other" non-teaching time being F11, C9, S11, C6 and S2.

2.52 The average proportion of time spent on non-teaching duties within the various subject departments in the 29 schools ranged from 15·2 per cent. in commerce and 15·8 per cent. in art to about 20 per cent. in English, classics, homecraft and physical education, but it is unlikely that these differences are significant. There were, however, substantial variations as between subject departments in different schools and as between subject departments in the same school. For example, the proportion of time spent on "other" non-teaching duties by teachers in English departments varied from 10·9 per cent. (F6) to 26·8 per cent. (S11)*, in mathematics departments from 7·5 per cent. (C1) to 23·2 per cent. (S11) and for homecraft, from 3·8 per cent. (C8) to 28·7 per cent. (C5). The following Table illustrates the variations between and within particular schools.

TABLE XVII

Percentage of time spent on non-teaching duties (other than administration and supervision) in ten staffing study schools

Department	School									
	C5	C6	C8	C9	C10	C15	S10	S11	F9	F11
English	13·3	21·1	13·4	26·6	13·1	13·2	17·1	26·8	19·9	22·6
History	15·6	19·1	2·5	17·5	17·8	14·2	13·8	24·5	20·0	14·9
Geography	15·6	19·4	8·8	21·4	15·2	13·5	16·7	21·6	20·0	17·8
Classics	16·7	22·8	7·3	21·7	13·3	8·8	13·4	19·1	0·0	—
Modern languages	10·1	14·5	16·7	19·1	12·9	16·8	15·1	17·9	20·0	11·6
Mathematics	12·5	19·4	10·2	18·2	12·9	13·3	17·1	23·2	14·4	19·1
Science	17·8	21·4	12·1	19·0	15·3	15·8	14·1	16·4	10·8	20·8
Art	11·1	14·6	9·4	16·3	25·4	11·9	15·8	12·5	13·8	26·1
Commerce	13·3	23·3	—	14·5	18·2	10·0	—	3·6	0·0	26·7
Technical	7·8	10·7	10·0	20·7	13·8	14·0	0·0	14·8	13·8	24·4
Homecraft	28·7	21·8	3·8	15·0	20·3	11·4	0·0	19·5	13·2	26·7
Music	15·0	19·0	11·4	17·8	16·3	8·8	20·0	22·6	22·5	13·0
Physical education	15·4	3·6	15·0	24·7	16·7	20·1	6·3	19·1	12·5	22·2
All departments	14·9	18·6	10·5	19·8	16·0	13·7	14·4	19·7	16·2	20·9
Pupils	700–800	700–800	1000–1100	1000–1100	1100–1200	1500–1600	900–1000	900–1000	600–700	600–700
PTR (all FTE)	14·4	16·2	19·8	14·2	18·9	17·7	17·3	15·3	18·3	14·9

(— indicates subject not taught)

2.53 It must be emphasised that the figures quoted are taken from a non-random sample of schools and are not necessarily representative; nor is any judgment implied as to what constitutes a reasonable allowance of time for non-teaching duties. The analysis does, however, suggest that present practice varies widely between and within authorities, and even within schools, and does not appear to be based on any common criteria of need or be closely related to other factors affecting pupil/teacher ratios. This is a field in which there would seem to be scope for a more comprehensive factual investigation, with a view to considering whether it would be practicable and desirable to suggest reasonable standards.

Teacher loads

2.54 A measure which takes into account both the size of teaching groups and the allowance of non-teaching periods is the number of pupil contacts per teacher aggregated over the week; this may be described as the "teacher load". Thus, a teacher who has 31 pupils from the first year and two pupils from the fourth year at a particular period should be counted as having 33 pupil contacts for that period. The following Table shows average weekly teacher loads by department (converted where necessary to a standard 40-period week) in some of the staffing study schools:

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* In this school the total amount of non-teaching time in the English department, including departmental administrative duties, accounted for 41 per cent. of the total time of the eight teachers concerned.

TABLE XVIII
Average teacher loads (pupil contacts) per week

Department	School											
	C2	C4	C9	C14	C15	S5	S6	S7	S10	F9	F11	F12
English	680	859	686	1132	887	741	957	684	896	967	702	526
History	542	1002	657	858	922	730	688	424	878	803	863	} 790
Geography	567	837	610	1004	808	624	1130	485	896	929	778	
Classics	450	636	297	—	667	657	530	488	502	—	—	—
Modern languages	786	636	755	927	744	750	976	689	727	1000	713	298
Mathematics	595	741	738	1054	845	678	896	627	828	1184	569	652
Science	410	564	464	568	472	515	513	434	539	626	592	461
Art	328	389	312	587	505	569	458	348	402	660	397	514
Commerce	300	340	362	677	547	372	—	282	—	—	336	433
Technical	345	477	446	526	449	408	480	277	569	473	405	466
Homecraft	221	474	340	438	508	275	385	287	638	495	312	448
Music	278	407	554	1139	562	355	540	208	357	708	852	415
Physical education	458	380	740	826	656	572	547	467	764	772	631	645

A more detailed comparison of teacher loads in 30 of the staffing study schools is given in Appendix D.

2.55 The Table and Appendix bring out strikingly the wide disparity in teacher loads between schools and between departments of the same school. It is interesting to speculate upon the reasons for the disparity in teacher loads between departments. One obvious cause is a shortage of teachers in a particular subject resulting in larger classes and/or less non-teaching time than would otherwise have been the case. Possibly, however, the reason in many cases is simply the difficulty of matching the demands of the curriculum against the number of specialist teachers available. It is unlikely that the number of teaching groups, plus a standard allowance of non-teaching time, will exactly match a whole number of teachers in the department concerned. Where the match is not perfect various alternatives are possible:

- (i) employ a teacher from another department for part of the time;
- (ii) employ a part-time teacher;
- (iii) employ an additional full-time teacher and either
    - (a) divide the pupils into smaller groups, or
    - (b) spread the balance of non-teaching time thoughout the department;
- (iv) reduce the number of teachers and either
    - (a) combine the pupils into larger groups, or
    - (b) restrict the amount of non-teaching time.

2.56 There is some evidence from the staffing study that greater economy in staffing and a better balance of teacher loads could be achieved by making more use of possibilities (i) and (ii) above. In some cases there would appear to be a marked reluctance to employ a teacher outside his own department even though he may be qualified to teach more than one subject. Commonly there is interchange between English and social subjects departments, and English teachers appear, on the whole, to be used more often outside their department than other teachers. By contrast a low teacher usage in practical and aesthetic subjects may be due to some extent to the fact that teachers tend to be qualified only in the particular subject and any "slack" in the timetable cannot readily be made up by a greater use of teachers outside their own departments. A feature of schools in the staffing study is the lack of interchange of mathematics and science staff although national statistics show that a high proportion of teachers of mathematics and science are qualified to teach both subjects. This is a matter which would appear to warrant further investigation. In the meantime, education authorities might wish to consider the possibility of achieving staffing economies by less rigid departmental specialisation and by the use of part-time and visiting teachers to even out teaching loads.

2.57 It seems not unlikely that in conditions of favourable teacher supply there will be a tendency towards alternative (iii) of paragraph 2.55, and moreover that the adoption of such a policy is likely to have a snowball effect by encouraging the creation of smaller teaching groups and lighter teacher loads in departments other than that immediately affected. It is possible that this effect may partially explain estimates of additional staff requirements in schools already generously staffed.

Employment of Non-teaching Staff

2.58 Information was obtained about numbers of non-teaching staff (other than janitorial and domestic) employed in the staffing study schools, and head teachers were invited to comment on the use made of such staff. The returns did not show any consistent pattern in the number of non-teaching staff employed. As might be expected, there was a tendency for the larger schools to employ more non-teaching staff, but this tendency was by no means marked: school C2, for example, with a roll of 400–500 pupils, employed two laboratory technicians while schools C11 and C13, each with over 1,000 pupils, employed none. In general there was a tendency for schools in certain areas to employ more non-teaching staff than schools in other areas, irrespective of other factors including the level of teaching staff in the school. School S7 for example—pupil/teacher ratio (CFTE) 11·9—employed five technicians and four clerical/secretarial staff whereas school C13—PTR 24·5—employed no technicians and only two clerical staff.

2.59 There was no clear correlation between the numbers of non-teaching staff and the proportion of time spent by teachers on non-teaching duties. School C6, for example, with the lowest proportion of time spent by teachers on administrative duties (2·8 per cent.) had no non-teaching staff apart from the school secretary, while in school C7, where 8 per cent. of the teachers' time was spent on administrative duties, there were four clerical/secretarial staff.

2.60 Several head teachers commented on the value of non-teaching staff in relieving principal and other teachers of extraneous duties, and generally in promoting the efficient running of the school and subject departments. The need for a more adequate provision of non-teaching staff was stressed by a number of head teachers.

2.61 The evidence collected in the study was not sufficiently complete or detailed to enable any worthwhile conclusions to be reached as to the possibility of non-teaching staff taking over a substantial amount of administrative work from the teaching staff, but the possibility would seem to merit further investigation. There seems little doubt about the importance of adequate non-teaching staff in promoting the efficient organisation of the school, and it seems at least possible that their employment could be a factor in relieving teachers of extraneous duties and, in this and other ways, in making employment in a school more attractive to the teaching staff.

Conclusion

The staffing study has helped to throw some further light on the factors affecting staffing ratios and the efficient use of teachers in secondary schools. It has shown the complexity of the variables which enter into the way in which teachers and pupils are organised into teaching groups, and which consequently play a large part in determining staffing demand. It has drawn attention to the disparity in staffing standards which exists between schools in different areas, and between schools in the same area; and it has thrown up a number of points on which further information and research is needed.

In the meantime the problem of very real shortages in some schools and of disparate standards continues to exist. It is hoped that education authorities will find some of the material in the study of immediate value to their directors of education and head teachers in suggesting ways by which teachers might be more effectively deployed.

Clearly however there is a need for a fresh approach to establish more accurately the real measure of national and local teacher requirements and to provide a basis for a more equitable distribution of teachers. It is hoped that the foregoing analysis of the staffing study schools will help towards such an aim.

APPENDIX A

Effect of applying alternative notional pupil/teacher ratios to individual schools (see paragraph 1.27)

Education Authority area	Number of pupils (adjusted) January, 1968	Number of certificated teachers in schools (FT & FTE) January, 1968	A (16:1)		B (16·5:1)		C (17:1)		D (17·5:1)	
			Net notional surplus	Net notional deficiency	Net notional surplus	Net notional deficiency	Net notional surplus	Net notional deficiency	Net notional surplus	Net notional deficiency
Cities										
Aberdeen	9,714	719	119	—	137	—	154	—	170	—
Dundee	10,112	638	24	—	43	—	54	—	70	—
Edinburgh	20,407	1,198	—	53	—	16	19	—	52	—
Glasgow	55,352	3,127	—	257	—	157	—	62	28	—
Counties										
Aberdeen	7,809	519	6	—	23	—	38	—	53	—
Angus	4,881	304	—	3	7	—	13	—	22	—
Argyll	2,855	185	3	—	8	—	14	—	19	—
Ayr	18,810	1,071	—	123	—	86	—	52	—	19
Banff	2,653	176	—	2	3	—	9	—	14	—
Berwick	1,163	85	8	—	11	—	13	—	15	—
Bute	627	48	5	—	7	—	8	—	9	—
Caithness	1,655	101	1	—	4	—	7	—	10	—
Clackmannan	2,319	147	—	2	2	—	7	—	11	—
Dumfries	4,701	287	—	11	—	2	7	—	15	—
Dunbarton	12,727	752	—	33	—	9	13	—	32	—
East Lothian	2,854	179	—	4	2	—	7	—	12	—
Fife	19,138	1,240	63	—	106	—	139	—	170	—
Inverness	5,217	294	—	48	—	37	—	27	—	17
Kincardine	1,525	99	—	—	3	—	6	—	9	—
Kirkcudbright	1,380	97	3	—	5	—	11	—	13	—
Lanark	36,196	1,706	—	547	—	479	—	415	—	355
Midlothian	6,712	430	15	—	28	—	39	—	50	—
Moray & Nairn	3,561	206	—	16	—	10	—	3	2	—
Orkney	998	66	—	2	—	—	2	—	4	—
Peebles	704	44	—	—	1	—	2	—	4	—
Perth & Kinross	6,744	439	6	—	20	—	32	—	44	—
Renfrew	20,021	1,021	—	223	—	186	—	151	—	118
Ross & Cromarty	3,554	230	—	4	3	—	10	—	17	—
Roxburgh	1,943	119	—	6	—	2	2	—	5	—
Selkirk	1,308	80	—	2	1	—	3	—	5	—
Stirling	11,402	699	—	6	15	—	35	—	54	—
Sutherland	879	70	8	—	10	—	12	—	14	—
West Lothian	5,888	355	—	14	—	2	8	—	18	—
Wigtown	1,871	123	6	—	9	—	13	—	15	—
Zetland	1,033	69	—	7	—	4	—	1	1	—
Totals	288,713	16,923	267	1362	448	990	675	711	957	509
Balance			— 1095		— 542		— 36		+ 448	

APPENDIX B

Schools taking part in staffing study

(1) *Survey Reference Number*	(2) *Size range* (increments of 100 pupils)	(3) *Pupil/ teacher ratio* (CFTE)	(4) *Pupil/ teacher ratio* (all FTE)	(5) *Education Authority area—general type*	(6) *Catchment area—general characteristics*
Comprehensive schools					
C1	400– 500	19·7	16·5	Industrial	Small town and surrounding rural area.
C2	400– 500	11·0	10·5	Mixed	Small coastal town and hinterland.
C3	500– 600	14·1	13·8	Rural	Small town and surrounding rural area.
C4	600– 700	16·0	14·6	Mixed	Large industrial town.
C5	700– 800	14·5	14·4	Industrial	City outskirts and adjacent rural area.
C6	700– 800	16·4	16·2	Rural	County town and part of county.
C7	1000–1100	15·0	14·7	City	Post-war council housing area.
C8	1000–1100	19·8	19·8	Industrial	Large burgh and mixed industrial/rural hinterland.
C9	1000–1100	14·5	14·2	City	Inner suburb; mixed housing.
C10	1100–1200	20·4	18·9	City	Post-war council housing area.
C11	1100–1200	23·1	20·0	Industrial	Industrial town and mainly industrial hinterland.
C12	1200–1300	18·1	18·1	City	Mainly working class suburb.
C13	1200–1300	24·5	18·2	Industrial	Industrial town and mainly industrial hinterland.
C14	1400–1500	20·6	19·4	Rural	County town and part of county.
C15	1500–1600	18·5	17·7	City	Suburb; mixed housing.
Selective 6-year secondary schools					
S1	500– 600	19·2	17·3	City	City and district.
S2	600– 700	14·8	14·8	Industrial	Large burgh.
S3	600– 700	18·6	18·3	City	City and district.
S4	600– 700	14·3	14·0	City	Mainly working class suburb.
S5	600– 700	15·2	14·9	Industrial	Industrial town and mainly industrial hinterland.
S6	700– 800	17·6	17·6	City	City.
S7	800– 900	11·9	11·7	Mixed	Industrial town and hinterland.
S8	800– 900	17·4	17·2	City	City and district.
S9	900–1000	15·6	15·6	City	City and district.
S10	900–1000	18·4	17·3	Rural	Same catchment area as C14.
S11	900–1000	16·0	15·3	Industrial	Large burgh and neighbouring towns and villages.
S12	1000–1100	25·7	23·7	Industrial	Large burgh and neighbouring towns and villages.
S13	1000–1100	13·9	13·9	City	City.
S14	1100–1200	16·3	16·3	City	City.

(1) *Survey Reference Number*	(2) *Size range* (increments of 100 pupils)	(3) *Pupil/ teacher ratio* (CFTE)	(4) *Pupil/ teacher ratio* (all FTE)	(5) *Education Authority area—general type*	(6) *Catchment area—general characteristics*
4-year secondary schools					
F1	50– 99	14·0	11·0	Rural	Island.
F2	300– 400	10·6	10·5	City	Mainly middle-class housing area.
F3	300– 400	14·8	14·8	Industrial	Large burgh and hinterland.
F4	300– 400	15·3	13·4	City	City centre in process of redevelopment.
F5	400– 500	17·7	16·6	Industrial	Small town and mainly rural parish.
F6	400– 500	17·9	15·5	Rural	Small coastal town and hinterland.
F7	500– 600	16·2	15·3	Rural	Part of county town; mixed housing.
F8	500– 600	28·3	24·3	Industrial	Working class area of large town.
F9	600– 700	20·1	18·3	Industrial	Industrial town and neighbouring village.
F10	600– 700	17·1	16·2	City	Suburb; mainly post-war council housing.
F11	600– 700	15·3	14·9	Industrial	City outskirts; mainly owner-occupier houses.
F12	700– 800	14·1	13·2	Mixed	Part of large town and hinterland mixed housing
F13	800– 900	15·5	15·0	City	Post-war council housing area.
F14	800– 900	25·7	18·9	Industrial	Industrial town and neighbourhood.
F15	900–1000	17·0	16·0	City	Mainly post-war council housing area.
F16	900–1000	25·5	22·1	Industrial	Large industrial town.
F17	1100–1200	15·9	13·9	City	Mainly post-war council housing area.
F18	1100–1200	16·3	15·2	Mixed	Industrial towns and villages.

APPENDIX C

Year III English Groups
Comprehensive Schools

	Total pupils	S.C.E.				Non-S.C.E.				Backward			
		Number of groups	Pupils	Average size of group	Pupils—% of year	Number of groups	Pupils	Average size of group	Pupils—% of year	Number of groups	Pupils	Average size of group	Pupils—% of year
C1	94	1	25	25·0	26·6	2	69*	34·5	73·4		*		
C2	114	2	51	25·5	44·7	2	59	29·5	51·8	1	4	4·0	3·5
C3	131	4	103	25·6	78·6	1	28*	28·0	21·4		*		
C4	169	4	135	33·7	79·9	2	34*	17·0	20·1		*		
C5	179	4	121	30·2	67·6	2	58*	29·0	32·4		*		
C6	173	3	101	33·7	58·4	2	72*	36·0	41·6		*		
C7	264	5	110	22·0	41·7	4	118	29·5	44·7	2	36	18·0	13·6
C8	287	4	138	34·5	48·1	3	111	37·0	38·7	2	38	19·0	13·2
C9	310	7	203	29·0	65·5	4	107*	26·7	34·5		*		
C10	333	4	120	30·0	36·0	4	145	36·2	43·5	2	68	34·0	20·5
C11	301	3	118	39·3	39·2	4	144	36·0	47·8	2	39	19·5	13·0
C12	333	6	161	26·8	48·3	6	172*	28·6	51·7		*		
C13	321	6	163	27·1	50·8	4	133	33·3	41·4	1	25	25·0	7·8
C14	387	5	192	38·4	49·6	5	176	35·2	45·5	1	19	19·0	4·9
C15	420	8	262	32·7	62·4	5	133	26·5	31·7	1	25†	25·0	5·9

* Backward pupils not shown separately.

† Mixed group of backward pupils and others.

APPENDIX D

Average teaching group sizes and teacher loads

School	Roll	PTR (all FTE)	English		History		Geography		Classics		Modern languages		Mathematics		Science		Art		Commerce		Technical		Homecraft		Music		Physical education	
			1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
C.1	400–500	16·5	25·7	844	22·0	721	20·5	583	8·4	228	17·5	588	26·0	895	15·3	504	17·6	616	9·9	338	13·6	504	13·7	433	21·2	656	25·7	841
C.2	400–500	10·5	20·1	680	17·4	542	16·6	567	12·5	450	20·6	786	17·7	595	11·6	410	9·4	328	8·8	300	9·7	345	7·4	221	8·3	278	15·3	458
C.3	500–600	13·8	24·4	769	17·7	644	21·4	784	13·2	401	19·3	617	24·0	843	13·8	428	14·3	510	7·3	257	12·0	376	9·2	290	12·7	466	27·6	993
C.4	600–700	14·6	26·7	859	29·1	1002	22·5	837	23·8	636	17·9	636	22·5	741	16·1	564	11·6	389	10·0	340	13·9	477	13·8	474	12·6	407	12·9	380
C.5	700–800	14·4	26·3	960	24·5	856	18·9	644	19·5	700	16·6	568	23·0	764	17·1	548	13·5	479	12·0	412	15·9	543	8·6	244	12·2	487	25·5	799
C.6	700–800	16·2	26·1	790	24·3	653	21·9	674	17·9	574	23·1	743	24·0	737	19·4	609	18·5	610	16·6	521	16·8	599	14·9	468	19·4	614	25·3	768
C.7	1000–1100	14·7	23·1	661	23·6	940	26·6	833	—	—	20·1	508	27·2	885	16·5	516	14·7	496	13·3	435	16·1	544	12·3	397	11·6	422	27·7	837
C.8	1000–1100	19·8	30·8	931	27·4	947	29·2	1037	20·9	733	25·6	820	29·6	884	18·8	649	17·9	638	—	—	17·6	598	18·4	681	26·8	914	22·9	716
C.9	1000–1100	14·2	26·1	686	21·1	657	23·2	610	5·5	297	24·7	755	26·2	738	15·4	464	9·4	312	10·6	362	15·1	446	11·0	340	18·1	554	25·3	740
C.10	1100–1200	18·9	32·5	1088	30·8	932	28·5	921	25·6	932	21·2	747	30·8	1152	18·0	714	18·4	622	14·7	519	18·2	618	15·9	520	22·5	793	34·5	1071
C.11	1100–1200	20·0	32·9	957	31·1	962	27·8	936	16·2	557	30·2	1011	29·9	836	19·1	627	14·7	532	16·8	588	15·5	529	14·5	507	26·3	946	29·5	1061
C.12	1200–1300	18·1	28·9	895	29·4	852	26·3	834	15·6	318	23·9	732	27·8	934	18·6	647	18·7	676	18·3	580	17·4	530	15·2	492	21·7	687	29·6	966
C.13	1200–1300	18·2	33·3	1037	27·8	884	24·6	856	18·9	524	26·6	884	31·0	1036	17·8	582	18·0	597	11·8	430	15·3	555	13·3	423	20·5	664	31·9	909
C.14	1400–1500	19·4	34·6	1132	30·0	888	31·9	1004	—	—	27·8	927	31·9	1054	17·3	568	16·7	587	21·0	677	16·6	526	13·8	438	31·6	1139	27·5	826
C.15	1500–1600	17·7	26·9	887	25·4	922	27·5	808	18·5	667	23·6	744	29·1	845	15·2	472	15·2	505	15·2	547	14·2	449	14·8	508	16·4	562	22·2	656
S.1	500–600	17·3	27·2	793	22·0	728	22·0	669	18·1	615	21·1	652	24·2	766	19·8	609	14·4	411	—	—	—	—	—	—	34·0	309	37·5	447
S.2	600–700	14·8	29·8	908	28·2	1010	22·7	847	17·2	525	21·6	698	27·9	874	16·1	528	12·6	378	17·8	517	11·4	352	10·1	304	15·6	457	16·1	500
S.3	600–700	18·3	23·0	703	21·4	654	19·4	650	17·8	599	23·7	783	26·5	855	20·8	677	12·8	435	—	—	—	—	—	—	14·7	440	‡	
S.5	600–700	14·9	25·0	741	23·6	730	21·6	624	21·1	657	20·4	750	21·2	678	15·4	515	16·1	569	10·9	372	12·1	408	8·0	275	13·3	355	19·1	572
S.6	700–800	17·6	32·8	957	22·2	688	28·5	1004	12·2	471	26·2	868	28·3	896	15·8	513	12·8	458	—	—	13·1	480	7·4	385	18·7	540	22·4	547
S.7	800–900	11·7	22·2	684	14·8	424	16·4	485	16·4	488	20·6	689	20·3	627	13·5	434	10·5	348	8·8	282	8·5	277	9·7	287	7·1	208	16·4	467
S.10	900–1000	17·3	29·3	896	26·9	878	29·5	896	17·5	502	21·6	727	25·6	828	16·5	539	12·6	402	—	—	14·2	569	16·4	638	11·5	357	26·3	764
S.11	900–1000	15·3	30·7	735	21·7	584	24·0	640	16·3	506	26·4	839	27·4	808	18·8	603	11·8	390	7·8	295	10·5	344	9·3	388	21·5	677	31·5	944
F.4*	300–400	13·4	20·1	566	—	—	—	—	—	—	18·6	532	24·0	613	13·8	408	12·9	403	13·6	424	12·5	409	12·3	366	18·1	531	17·0	513
F.5*	400–500	16·6	26·4	972	—	—	—	—	14·7	363	20·6	624	25·3	643	16·0	444	15·8	592	12·1	452	15·2	496	13·1	465	20·5	708	24·7	878
F.6	400–500	15·5	22·0	741	24·9	—	24·9	—	20·0	—	17·6	581	23·0	775	16·5	567	15·8	518	17·9	664	11·1	414	11·4	414	26·5	830	26·7	944
F.9	600–700	18·3	30·6	967	30·4	803	32·6	929	—	—	32·1	1000	35·2	1184	17·6	626	18·8	660	—	—	15·2	473	15·4	495	24·8	708	24·5	772
F.11†	600–700	14·9	24·0	702	28·2	863	22·9	778	—	—	24·3	713	25·0	569	19·4	592	14·3	397	12·8	336	15·7	405	11·0	312	19·3	852	24·8	631
F.12	700–800	13·2	17·3	526	23·1	790	—	—	—	—	10·1	298	20·9	652	15·6	461	14·7	514	11·8	433	14·4	466	13·7	448	13·2	415	19·3	645
F.14	800–900	18·9	31·4	1261	26·3	905	28·9	998	—	—	23·8	841	32·1	939	18·2	615	15·7	530	16·7	602	17·7	604	15·4	514	17·4	576	32·3	1067

Key to column headings

1. Average size of teaching group.
2. Average number of pupil contacts per teacher per week, adjusted where necessary to a common basis of 40 periods per week. Periods of minority subjects have been included as part of the departmental load.

Deputies and women advisers have been counted as fractions of teachers, the fraction depending of the proportion of time available for teaching in a department.

Footnotes

* English, history and geography treated as one department.

‡ Impossible to separate primary and secondary for physical education.

† History, geography and social studies taken together.

Printed in Scotland for Her Majesty's Stationery Office by Hay Nisbet & Co., Ltd., Glasgow. Dd. 239744 K.40